CLAIMS

Having thus described the invention, what is claimed is:

1. A wire guide adapted and configured to convey a weld wire in a weld wire drive assembly, and to provide lateral support to such weld wire in such weld wire drive assembly, such weld wire drive assembly having at least one drive roll which is adapted and configured to drive such weld wire in such drive assembly, said wire guide comprising:

(a) an elongate body having an outer surface, a length, and first and second ends;

(b) an elongate bore, extending along the length of, and through, said elongate body; and

(c) an aperture extending through said elongate body transverse to, and intersecting, the elongate bore.

2. A wire guide as in Claim 1, a receptacle extending inwardly, along the length of said wire guide, from at least one of the first and second ends.

3. A wire guide as in Claim 2, said receptacle defining a generally cylindrical cavity.

4. A wire guide as in Claim 2, said receptacle defining a generally conical cavity.

5. A wire guide as in Claim 1, the aperture comprising first and second depressions extending into the outer surface of said elongate body from opposing sides thereof, each such depression extending fully across a width of the elongate bore so as to define a side elevation depression profile, and opening into the elongate bore.

6. A wire guide as in Claim 1, said elongate body defining a first width dimension, and being adapted and configured to cooperate with a such drive roll having a second width dimension between first and second sides of such drive roll, magnitude of the first width dimension of said elongate body being less than magnitude of the second width dimension of such drive roll.

7. A wire guide as in Claim 1, the aperture comprising a generally arcuate depression extending into the outer surface of said elongate body.

8. A wire guide as in Claim 1, further comprising an inlet guide having a bore extending therethough and communicating with one of said first and second ends of said elongate body, (i) the bore which extends through said inlet guide, and (ii) the bore which extends though said elongate body, being generally coaxial with respect to each other.

9. A wire guide as in Claim 1, the aperture comprising a first aperture, said elongate body further comprising a second aperture extending through said elongate body, transverse to the elongate bore, the first and second apertures being spaced from each other along the length of said elongate body.

10. A wire guide as in Claim 1 wherein a single unitary body of said wire guide encompasses an entirety of a circumference of the elongate bore.

11. A wire guide as in Claim 1 wherein the aperture has a length extending along the length of said elongate body, and a width, and wherein the width of the aperture is generally limited to no more than about three times a diameter of the elongate bore.

12. A wire guide as in Claim 5 wherein the first and second depressions also open into each other.

13. A wire feeder assembly adapted and configured to feed weld wire, said wire feeder assembly comprising a wire guide as in Claim 1.

14. A welding system comprising a wire feeder assembly as in Claim 13.

15. A method of advancing a weld wire along a generally pre-determined path of travel, the method comprising using a wire feeder assembly as in Claim 13 to so advance the wire.

16. A wire guide subassembly, adapted and configured to convey a weld wire in a weld wire drive assembly, and to provide lateral support to such weld wire in such weld wire drive assembly, such weld wire drive assembly having at least one drive roll which is adapted and configured to drive such weld wire in such drive assembly, said wire guide subassembly comprising:

(a) an inlet member having a bore extending therethrough and first and second ends, at least one of said first and second ends having a guide interface; and

(b) a wire guide, comprising

(i) an elongate body having first and second ends, and an elongate bore extending through said elongate body between the first and second ends, and

(ii) an aperture extending through said elongate body transverse to, and intersecting, the bore,

said guide interface of said inlet member communicating with one of the first and second ends of said elongate body of said wire guide, the bore of said inlet member and the bore of said elongate body being generally coaxial.

17. A wire guide subassembly as in Claim 16, the respective one of the first and second ends of said elongate body, which is in communication with said guide interface, having a cavity formed therein, which cavity is adapted and configured to receive at least a portion of said guide interface.

18. A wire guide subassembly as in Claim 17 wherein a receiving inner surface of said guide interface, which receives the weld wire and guides the weld wire to the wire guide, is a generally conically tapering surface and wherein the cavity is a generally conically-shaped cavity.

19. A wire guide subassembly as in Claim 16 wherein the aperture comprises a generally arcuate depression which extends into the outer surface of said elongate body.

20. A wire guide subassembly as in Claim 16, said elongate body defining a first width dimension, and being adapted and configured to cooperate with a such drive roll having a second width dimension between first and second sides of such drive roll, magnitude of the first width dimension of said elongate body being less than magnitude of the second width dimension of such drive roll.

21. A wire guide subassembly as in Claim 16, a receptacle extending inwardly along the length of the elongate bore in the elongate body, from one of the first and second ends, said receptacle defining a diameter dimension of a first magnitude greater than a second magnitude of such diameter of the elongate bore which extends through said elongate body.

22. A wire guide subassembly as in Claim 16, the aperture comprising first and second depressions extending into the outer surface of said elongate body, from opposing sides thereof, each such depression extending fully across a width of the elongate bore so as to define a side elevation depression profile, and opening into the elongate bore.

23. A wire guide subassembly as in Claim 22 wherein the first and second depressions also open into each other.

24. A wire guide subassembly as in Claim 16, first and second receptacles extending inwardly, along the length of said wire guide, from the first and second ends.

25. A wire guide subassembly as in Claim 16, the aperture comprising a first aperture, said elongate body further comprising a second aperture extending through said elongate body, transverse to the elongate bore, the first and second apertures being spaced from each other along the length of said elongate body.

26. A wire guide subassembly as in Claim 16 wherein a single unitary body of said wire guide encompasses an entirety of a circumference of the elongate bore.

27. A wire guide subassembly as in Claim 16 wherein the aperture has a length extending along the length of said elongate body, and a width, and wherein the width of the aperture is generally limited to no more than about three times a diameter of the elongate bore.

28. A wire feeder assembly adapted and configured to feed weld wire, said wire feeder assembly comprising a wire guide subassembly as in Claim 16.

29. A welding system comprising a wire feeder assembly as in Claim 28.

30. A method of advancing a weld wire along a generally pre-determined path of travel, the method comprising using a wire feeder assembly as in Claim 28 to so advance the wire.

31. Wire guide structure, adapted and configured to convey a weld wire in a weld wire drive assembly, and to provide lateral support to such weld wire in such weld wire drive assembly, such weld wire drive assembly having at least one drive roll which is adapted and configured to drive such weld wire in such drive assembly, said wire guide structure comprising:

(a) an elongate body having an outer surface, a length, and first and second ends;

(b) a collar extending radially outwardly from the outer surface of said elongate body;

(c) an elongate bore extending along the length of, and through, said elongate body; and

(d) an aperture extending through said elongate body transverse to the bore.

32. Wire guide structure as in Claim 31, further comprising a resilient holder communicating with at least one of said collar and the outer surface of said elongate body.

33. Wire guide structure as in Claim 31 wherein said collar has a channel formed therein and further comprising a resilient holder communicating with said channel.

34. Wire guide structure as in Claim 31, the aperture comprising a generally arcuate depression extending into the outer surface of said elongate body.

35. Wire guide structure as in Claim 31, said elongate body defining a first width dimension, and being adapted and configured to cooperate with a such drive roll having a second width dimension between first and second sides of such drive roll, magnitude of the first width dimension of said elongate body being less than magnitude of the second width dimension of such drive roll.

36. Wire guide structure as in Claim 31, a receptacle extending inwardly along the length of the elongate bore in the elongate body, from one of the first and second ends, said receptacle defining a diameter dimension of a first magnitude greater than a second magnitude of such diameter of the elongate bore which extends through said elongate body.

37. Wire guide structure as in Claim 31, the aperture comprising first and second depressions which extend into the outer surface of said elongate body, from opposing sides thereof, each such depression extending fully across a width of the elongate bore so as to define a side elevation depression profile, and opening into the elongate bore.

38. Wire guide structure as in Claim 37 wherein the first and second depressions also open into each other.

39. Wire guide structure as in Claim 31, first and second receptacles extending inwardly, along the length of said wire guide, from the first and second ends.

40. Wire guide structure as in Claim 31, further comprising an inlet guide having a bore extending therethough and communicating with one of said first and second

ends of said elongate body, (i) the bore which extends through said inlet guide, and (ii) the bore which extends through said elongate body, being generally coaxial with respect to each other.

41. Wire guide structure as in Claim 31, the aperture comprising a first aperture, said elongate body further comprising a second aperture extending through said elongate body, transverse to the elongate bore, said first and second apertures being spaced from each other along the length of said elongate body.

42. Wire guide structure as in Claim 31 wherein a single unitary body of said wire guide encompasses an entirety of a circumference of the elongate bore.

43. A wire feeder assembly adapted and configured to feed weld wire, said wire feeder assembly comprising wire guide structure as in Claim 31.

44. A welding system comprising a wire feeder assembly as in Claim 43.

45. A method of advancing a weld wire along a generally pre-determined path of travel, the method comprising using a wire feeder assembly as in Claim 43 to so advance the wire.

46. A wire guide subassembly, adapted and configured to convey weld wire in a weld wire drive assembly, and to provide lateral support to such weld wire in such weld wire drive assembly, such weld wire drive assembly having at least one drive roll which

is adapted and configured to drive such weld wire in such drive assembly, said wire guide subassembly comprising:

(a) an elongate body having an outer surface, a length, and first and second ends;

(b) an elongate bore extending along the length of, and through, said elongate body;

(c) an aperture extending through said elongate body transverse to, and intersecting, the bore; and

(d) a resilient holder projecting radially outwardly from the outer surface of said elongate body adjacent one of the first and second ends.

47. A wire guide subassembly as in Claim 46, the aperture further comprising a generally arcuate depression extending into the outer surface of said elongate body.

48. A wire guide subassembly as in Claim 46, said elongate body defining a first width dimension, and being adapted and configured to cooperate with a such drive roll having a second width dimension between first and second sides of such drive roll, magnitude of the first width dimension of said elongate body being less than magnitude of the second width dimension of such drive roll.

49. A wire guide subassembly as in Claim 46, a receptacle extending inwardly along the length of the elongate bore in the elongate body, from one of the first and second ends, said receptacle defining a diameter dimension of a first magnitude greater

than a second magnitude of such diameter of the elongate bore which extends through said elongate body.

50. A wire guide subassembly as in Claim 46, the aperture further comprising first and second depressions which extend into the outer surface of said elongate body, from opposing sides thereof, each such depression extending fully across a width of the elongate bore so as to define a side elevation depression profile, and opening into the elongate bore.

51. A wire guide subassembly as in Claim 50 wherein the first and second depressions also open into each other.

52. A wire guide subassembly as in Claim 46, first and second receptacles extending inwardly, along the length of said wire guide, from the first and second ends.

53. A wire guide subassembly as in Claim 46, further comprising an inlet guide having a bore extending therethough and communicating with one of the first and second ends of said elongate body, (i) the bore which extends through said inlet guide, and (ii) the bore which extends through said elongate body, being generally coaxial with respect to each other.

54. A wire guide subassembly as in Claim 46, the aperture comprising a first aperture, said elongate body further comprising a second aperture extending through said elongate body, transverse to the elongate bore, the first and second apertures being spaced from each other along the length of said elongate body.

55. A wire guide subassembly as in Claim 46 wherein a single unitary element of said wire guide encompasses an entirety of a circumference of the elongate bore.

56. A wire feeder assembly adapted and configured to feed weld wire, said wire feeder assembly comprising a wire guide as in Claim 46.

57. A welding system comprising a wire feeder assembly as in Claim 56.

58. A method of advancing a weld wire along a generally pre-determined path of travel, the method comprising using a wire feeder assembly as in Claim 56 to so advance the wire.

59. A wire guide adapted and configured to convey a weld wire in a weld wire drive assembly, and to provide lateral support to such weld wire in such weld wire drive assembly, such weld wire drive assembly having at least one drive roll which is adapted and configured to drive such weld wire in such drive assembly, said wire guide comprising:

(a) an elongate body having an outer surface, a length, and first and second ends,

(b) an elongate bore, comprising a bore circumference, the elongate bore extending along the length of, and through, said elongate body; and

(c) an aperture extending through said elongate body transverse to, and intersecting, the elongate bore,

wherein a single unitary element of said wire guide encompasses an entirety of the circumference of the elongate bore.

60. A wire guide as in Claim 59, the aperture comprising first and second depressions extending into the outer surface of said elongate body from opposing sides thereof, each such depression extending fully across a width of the elongate bore so as to define a side elevation depression profile, and opening into the elongate bore.

61. A wire guide as in Claim 59, said elongate body defining a first width dimension and being adapted and configured to cooperate with a such drive roll having a second width dimension between first and second sides of such drive roll, magnitude of the first width dimension of said elongate body being less than magnitude of the second width dimension of such drive roll.

62. A wire guide as in Claim 59, the aperture comprising a generally arcuate depression extending into the outer surface of said elongate body.

63. A wire guide as in Claim 59, the aperture comprising a first aperture, said elongate body further comprising a second aperture extending through said elongate body, transverse to the elongate bore, the first and second apertures being spaced from each other along the length of said elongate body.

64. A wire guide as in Claim 59 wherein the aperture has a length extending along the length of said elongate body, and a width, and wherein the width of the

aperture is generally limited to no more than about 3 times a diameter of the elongate bore.

65. A wire feeder assembly adapted and configured to feed weld wire, said wire feeder assembly comprising a wire guide as in Claim 59.

66. A welding system comprising a wire feeder assembly as in Claim 65.

67. A method of advancing a weld wire along a generally pre-determined path of travel, the method comprising using a wire feeder assembly as in Claim 65 to so advance the wire.

68. A method of advancing a weld wire along a generally predetermined path of travel in a wire feeder assembly, the wire feeder assembly comprising a wire drive assembly, the method comprising:

(a) driving the wire using the drive assembly; and

(b) laterally supporting the wire along substantially the entirety of that portion of the path which traverses the drive assembly.